ENGINEERING MAINTENANCE BRANCH BULLETIN

Issue # 012

THIS ISSUE CONTAINS:

- *Picture of the Month*
- *SAMM/Maintenance Tips*
- *Case Study – USNS WHEAT RCA*
- *Question of the Month – Generating ABS Equipment Reports in SAMM*
- *CMEO Training – What Are You Waiting For?*
- *Loose Lips & Feedback?*
- *Vibration: DCA-31 Recovery Methods*

This is *the* engineering maintenance management bulletin to MSC ships and shoreside personnel. The purpose of the bulletin is to inform all concerned of current COMSC Preventive Maintenance management practices associated with any new or revised policy and procedures, along with helpful tips & tricks for improved maintenance. The bulletin will also discuss and present any upcoming initiatives in the various programs.

We continue our efforts to bring you useful information with the page dedicated to the Vibration Monitoring System (VMS). This will have useful tips as well as past case histories.

PICTURE OF THE MONTH REQUEST - WE NEED *YOUR* PICTURES!!

It is said, **"A picture's worth a thousand words!"** If you have pictures of Shipboard Maintenance (Vibration Monitoring, Oil Sampling, machinery upkeep, etc.) being performed, or a visit from a SAMM or VMS Tech Rep, please send them (along with a *brief* narrative as to what the picture is about) to Norman Wolf (e-mail: Norman.wolf@navy.mil).

Jason Diel of Seaworthy Systems Inc. collects maintenance data for a purifier using the pocket PC while aboard the USNS SAMUEL L. COBB (T-AOT 1123). Seaworthy Systems personnel visited the vessel to install the SAMM System and perform training for the vessel's Engineering staff.

SAMM/Maintenance Tips

Alignment Tip -PIPE STRAIN: When performing an alignment on a new pump installation, check to make sure that pipe stress acting on the pump is within reasonable amounts.

To check for this, take a set of zero-reference readings with a laser alignment system, and start the move function, monitoring both the vertical and horizontal planes simultaneously. Slowly unbolt the piping and check to make sure that no more than .002" movement occurs at the shaft. In addition, the retightening can be monitored, to establish the repeatability of the pipe strain. If movement greater than .002" is observed, the piping must be modified to take care of this problem.

-Tip provided by LUDECA, INC. http://www.ludeca.com

Taper loc care: To avoid abrasion and corrosion wear to the Allen head bolts (specifically material handling fans) add a small amount of silicone to the bolt head. When it's time to remove the Allen bolt dig out the silicone. The bolt will look like new.

-Tip provided by Don Carmen, Vibration Tech
Weyerhaeuser M.D.F, Eugene OR USA

Case Study – USNS WHEAT RCA

By Dan Norton, Seaworthy Systems, Inc.

Recently a Root Cause Analysis (RCA) was concluded with regard to several diesel engine driven generator failures that occurred on the USNS LCPL ROY M. WHEAT. The WHEAT is one of Military Sealift Command's 17 Container & Roll-on/Roll-off Ships and is part of the 36 ships in the Prepositioning Program.

Operational and reliability issues started to materialize shortly after a shipyard availability that took place in early 2005 and continued throughout the year until the functional loss of the two primary generating units during the September-October 2005 time frame. Loss of these two units severely and negatively influenced the capability of the vessel and led to the initiation of an RCA investigative process.

The purpose of an RCA investigation is to identify what events and/or shortcomings preceded a particular failure. Causes may be related to material issues or human issues and commonly involve both types and seldom trace to just one single root cause. An RCA investigation *is not* to place blame, only identify cause and effect relationships associated with a given failure so steps can be taken to mitigate similar failures in the future.

The investigation identified six distinct modes of engine/generator failure and three primary causes. In no particular order these are:

- Lube oil contamination - Non-OEM parts
- Fuel system component failure - Non-OEM parts
- Excessive lube oil consumption - Marginal component break-in
- Generator bearing failure - Non-OEM parts
- Camshaft failure - Excessive component load
- Camshaft lobe deterioration - Excessive component load

The ship is now back to full operational status after having accomplished either direct component replacement in the case of the Non-OEM part issues, installation of redesigned parts along with greater attention given to the impact of tolerance-stack-up in the case of the excessive component load issues, and finally instituting better adherence to acceptable operating profiles and procedures in the case of the Marginal component break-in issue.

During the course of the investigation all avenues of information gathering and collection were utilized including personnel interviews, machinery history and operation logs, physical examination and analysis of failed components, as well as visual inspection of the equipment and components. All of these were extremely beneficial with regard to compiling a complete picture of the operational events, human decisions, and repair actions that led up to each failure.

Of particular value was the type and amount of information available in the vessel's SAMM system. Examples of the type of condition monitoring information reviewed and analyzed included, oil sample and machinery vibration results; crew source information included voyage repair, machinery history, and operating log entries; but of significant usefulness, especially for the excessive oil consumption investigation, was automatically collected machinery performance data. This last type of information proved exceptionally telling in documenting and presenting the operating load profiles of each individual generator. Maintaining operating loads within specific OEM guidelines is necessary to ensure proper component break-in after cylinder liner and piston ring repairs, a break-in process which lies at the heart of any oil consumption quotation. Excessive oil consumption is one of the principal indicators of a poor liner/ring break-in; a cause and effect relationship that has been substantiated through follow-up repairs and closer observance of established guidelines.

For further information, or if you have any questions, please contact Seaworthy Systems Inc. at Phone #: 703-671-3444, or samm.contractor@seaworthysysdc.com.

ENGINEERING MAINTENANCE BRANCH BULLETIN

Question of the Month:

Generating ABS Equipment Reports in SAMM: How can I get Machinery History Data for an ABS Survey?

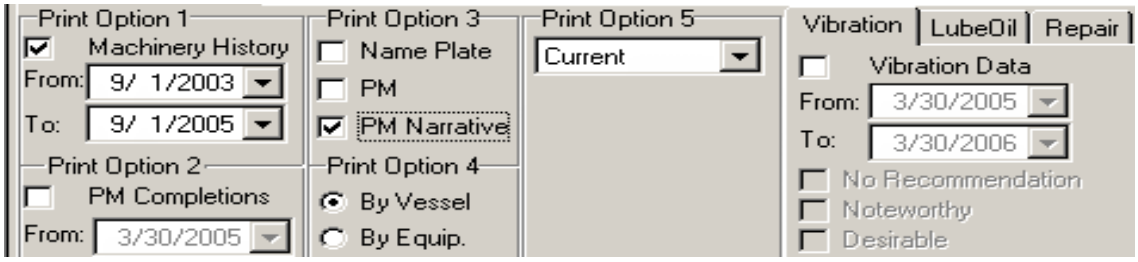
(By Seaworthy Systems, Inc.)

Prior to an ABS Survey, it is always useful to be prepared by having in hand a report from SAMM of all relevant equipment to the attending ABS Surveyor. At a minimum, it should include maintenance completions and narratives, but might also include machinery history, condition monitoring results, nameplate data, etc. All of this data can be compiled in SAMM using the "Equipment Reports" module. On opening this module, you will first note that it does not look the same as the other modules. To generate a report, do the following:

- Open the Equipment Module in SAMM
- Add to the list as much equipment as needed by selecting the item(s) from the equipment tree on the left, then clicking "Add to List". Keep in mind, the more items you add, the longer it will take to generate the report. Try only two or three items your first time.
- At the bottom, select the date range in "Print Option 1, and check "PM Narrative" in Print Option 3 (see below). These items are useful for ABS reports. Add any additional selection criteria you want to report on.
- Click "Print". A print preview is always generated first; you can create a hard copy by selecting the printer icon in the preview window. You can also generate an electronic copy of this report by selecting the envelope icon next to the printer, which will start a wizard asking which format and location you want to place this electronic copy.

It can take a little while to get used to this different view, but after some initial training, you will find it a very useful tool for getting a lot of different data out of SAMM.

For further information, or if you have any questions, please contact Seaworthy Systems Inc. at Phone #: 703-671-3444, or samm.contractor@seaworthysysdc.com.



SAMM 'FAST FACTS'

Vessels currently in MSC Fleet: **104**
Vessels (Active) currently equipped with SAMM: **129**

- **93** MSC
- **16** U.S. Navy (LSDs, SWIFT, HSV)
- **13** NOAA vessels
- **7** Miscellaneous (MUSE Barge, Lighterage, etc.)

Engineering Maintenance Branch Website – Fresh and Update!!

The Engineering Maintenance Branch web page continues to get a bit of a facelift; along with some helpful downloads (SAMM, PENG, EASy overviews, OAS Guide, ***past issues of our bulletin,*** etc.), the latest CMEO Class information and who to contact for questions or comments regarding Engineering. Maintenance. For helpful updates, keep checking it out!

http://www.msc.navy.mil/n7/engmgmt/engmgmt.htm

ENGINEERING MAINTENANCE BRANCH BULLETIN

N711 – Points of Contact:
(cut it out & keep it handy!)

Branch Chief – Randy Torfin, (202) 685-5744 (Randel.Torfin@navy.mil);

Sr. Mechanical Engineers – Will Carroll, (202) 685-5742 (William.S.Carroll@navy.mil) & Norm Wolf, (202) 685-5778 (norman.wolf@navy.mil);

Mechanical Engineers – Liem Nguyen, (202) 685-5969 (liem.nguyen@navy.mil) & Andrew Shaw, (202) 685-5721 (andrew.shaw@navy.mil);

Electrical Engineer – David Greer (202) 685-5738 (David.Greer1@navy.mil)

CMEO Training – What Are YOU Waiting For????

CMEO (**C**IVILIAN **M**ARINE **E**NGINEERING **O**FFICER) is a two-week training course (held *quarterly*) at the Naval Supply Corps School in Athens, GA. It is for both shipboard and shoreside engineers. The Engineering Directorate (Code N7) of Military Sealift Command hosts the course and encourages ***ALL*** MSC Engineers (3rd A/Es through Chief Engineers, as well as Port Engineers and Project Engineers) to attend *(**Note:** MSC shipboard engineers are given priority when classes are full).*

CMEO provides training on an array of topics such as: SAMM (Condition Monitoring, Maintenance Scheduling and Repair, Diesel Engine Analysis, Logbook, etc.), Vibration Monitoring, Lube Oil, Fuel Oil (NEURS), Chemicals (boiler treatment, sewage treatment, etc.), Supply (COSAL, ShipCLIP), Environmental, and Safety. SAMM is interactively taught using actual data and each module is discussed extensively.

Upcoming CY '06 class dates:

- July 10-21, 2006
- December 04-15, 2006

For further information and to sign up, please go to the CMEO website:

http://63.219.124.12/cmeoclasssignup/cmeo.htm

Or contact Dave Greer (david.greer1@navy.mil) with any questions.

NOT TRUE! (WHEN IT COMES TO FEEDBACK)

With each issue, we get more and more requests for the newsletters, from both shoreside AND shipboard engineers, so we know you're reading them. **Take the time and tell us what YOU think and what YOU want to see on these pages!** Feedback is **ESSENTIAL** in making this bulletin a help to do your job "smarter not harder" for all shipboard personnel. Please pass on **any and all** feedback from your Engine Department personnel.

Not just another piece of Junk mail

JUNK MAIL: You don't want it; we don't want to create it. Make this ***YOUR*** Maintenance Management Bulletin. If there's a SAMM or Maintenance tip, topic, question, suggestion, or comment on how to make this useful, or something relating to Engineering Maintenance you think should get out to the ships, please pass it on. Send your submission to Randy Torfin (randel.torfin@navy.mil) *OR* Norman Wolf (norman.wolf@navy.mil).

COMING UP FOR *NEXT ISSUE*!

More SAMM/Maintenance Tips!!

The Next Phase of PM Optimization

Question of the Month: What's This Replication Stuff?

A New Picture of the Month!

Vibration Monitoring Tips & Information

DCA-31 Error Recovery Methods

What to do if you have problems

(By DLI Engineering)

Although we have made every effort to track down and eliminate bugs, users may encounter software problems that are discovered after a version has been released. For this reason, the different mechanisms for resetting the data collector should be known and understood. Four mechanisms are available to users to recover the data collector from an error state:

1. Cycle power – turn unit off then turn it back on
2. "Soft restart" (Simultaneously press 7, 8, 9, & 3) – Restarts application software
3. "Soft reboot" (Simultaneously press 7, 8, 9, & 2) – Reboots operating system; restarts application software
4. "Hard reset" (press button in battery compartment) – Re-initializes hardware; Clears volatile memory; Restores default system registry (including instrument settings)

A soft restart or reboot must be initiated from the top-level menu. The indicated keys must be pressed simultaneously. Pressing 7-8-9-3 ("soft restart") will cause the splash screen to appear and the application software to restart, but will not recover the data collectors from serious errors related to the operating system. Pressing 7-8-9- 2 ("soft reboot") causes a dialog titled "System Rebooting" to display with the message "Release keys to cancel..." The 7-8-9-2 keys must remain pressed until the timer bar on this dialog reaches full, whence the unit will shut off. If the keys are released before the unit shuts off, the reboot is cancelled. Once the unit is shut off, turning it on should reboot the operating system and start the application software. Almost all errors can be recovered from using the "Soft reboot" key combination. Some less serious errors may be recovered from by cycling power or performing a "Soft Restart", but these operations are not any easier than doing a soft reboot to begin with.

Certain serious system errors might cause the unit to cease reading input from the keyboard, and these can only be recovered from using a hard reset. To perform this operation, the battery cover must be removed. The reset button is at the bottom of a hole at the lower left corner of the battery compartment. A paper clip or similar sharp object is required to gently press the button. If the power is on, the power will be turned off when the button is pushed. When the unit is first turned on following a reset operation, the "Bootloader" screen comes up, giving the user the choice of:

1. Run Windows CE
2. Load OS Image via RS232
3. Load OS Image via PCMCIA

Options 2 and 3 are used to update firmware. Option 1 is used for restarting the system following a reset, and pressing it again causes the power to turn off. The next time power is turned on, the message "Restoring system registry" appears, and then the application software starts. The instrument setup screen appears the first time the unit is started following a reset, to allow the user to enter the current date and time and other instrument settings that were cleared by the reset.

None of the recovery mechanisms described above clears the survey or data loaded in the flash memory. Tests that have been completed are generally inviolable unless the user specifically erases or retakes them, or reloads the route. Data collector calibration information is retained. With a hard reset, however, any settings editable via the "Instrument Setup", "Config", or "+/- Debug" screens, including date/time and barcode entry mode, are reset to defaults. These settings are not affected by "soft" reset operations.

For more information, or if you have any questions, you can reach DLI by Phone (206-842-7656), or E-Mail (bhoyson@dliengineering.com or mjohnson@dliengineering.com).